

CLAIMS

What is claimed is:

1. A rotating punch for crimping two or more framing members together comprising:

a stem extending between opposite first and second ends, said first end having a tip configured to penetrate through framing members, and said second end being configured to receive a driving force and a rotational torque; and

at least two wings members extending along a portion of said stem between said first and second ends, each of said wing members having a leading edge configured to penetrate through framing members in response to said driving force, and each of said wing members having an engaging surface configured to cause a portion of said framing members proximate said engaging surfaces to deform in response to rotation of said wing members and crimp together.

2. The punch of claim 1, wherein said engaging surfaces cause said framing members to curl in response to rotation of said wing members.

3. The punch of claim 1, wherein said engaging surfaces curve as said engaging surfaces extend axially along said wings.

4. The punch of claim 3, wherein said engaging surfaces curve as said engaging surfaces extend radially away from said stem along said wing members.

5. The punch of claim 1, wherein said engaging surfaces curve as said engaging surfaces extend radially away from said stem along said wing members.

6. The punch of claim 1, wherein said at least two wing members are four wing members.

7. The punch of claim 1, wherein a portion of said stem between said tip and said wing members is threaded.

8. The punch of claim 7, wherein said threaded portion is configured to pull said stem through said framing members in response to rotation of said stem.

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9. A method of crimping two or more framing members together with a rotating punch comprising the steps of:

- (a) positioning a tip of a punch adjacent two or more adjacent framing members;
- (b) applying an driving force to said punch;
- (c) driving said punch through said framing members with said driving force until wings on said punch extend through said framing members;
- (d) rotating said punch in a first direction;
- (e) deforming a portion of said framing members proximate said punch with said wing members as said punch is rotating so that said framing members are crimped together;
- (f) rotating said punch in a second direction opposite said first direction; and
- (g) removing said punch from said framing members.

10. The method of claim 9, wherein steps (d) and (f) include rotating said punch approximately 45 degrees.

11. The method of claim 9, wherein steps (d) and (f) include rotating said punch approximately 90 degrees.

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12. The method of claim 9, wherein step (e) includes deforming said portion of said framing members with wing members that curve as said wing members extend axially along said punch.

13. The method of claim 12, wherein step (e) includes deforming said portion of said framing members with wing members that curve as said wing members extend radially away from said punch.

14. The method of claim 9, wherein step (e) includes deforming said portion of said framing members with wing members that curve as said wing members extend radially away from said punch.

15. The method of claim 9, wherein step (e) includes deforming said portion of said framing members so that said portions curl.

16. The method of claim 9, wherein step (b) includes applying an driving force with a powered driver, and steps (d) and (f) includes rotating said punch with said powered driver.

17. The method of claim 16, wherein step (b) includes supporting a surface of said framing members opposite said punch with a back plate on said powered driver.

18. A tool for fastening framing members together by crimping comprising:

a first piercing member oriented in a first direction and operable to move along a first axis to pierce and penetrate through framing members thereby deforming a first portion of said framing members and forming a first crimp joint; and

a second piercing member offset from said first piercing member and oriented in a second direction different from said first direction, said second piercing member operable to move along a second axis to pierce and penetrate through said framing members thereby deforming a second portion of said framing members and forming a second crimp joint that in conjunction with said first crimp joint fastens said framing members together.

19. The tool of claim 18, wherein said second direction is substantially opposite said first direction.

20. The tool of claim 18, wherein said first and second axial axes are not perpendicular to said framing members.

21. The tool of claim 18, wherein said second portion is adjacent said first portion.

22. The tool of claim 18, further comprising a back plate that supports a surface of said framing members opposite said piercing members when said piercing members pierce and penetrate through said framing members.

23. The tool of claim 18, wherein said piercing members operate concurrently.

24. A method of fastening two or more framing members together by crimping comprising the steps of:

(a) positioning a tip of at least one piercing member adjacent two or more adjacent framing members;

(b) driving said at least one piercing member through said framing members in a first direction and at a non-perpendicular angle relative to an outer surface of said framing members;

(c) deforming in said first direction a first portion of said framing members proximate said at least one piercing as said at least one piercing member is being driven through said framing members so that said deformation crimps said framing members together;

(d) driving said at least one piercing member through said framing members in a second direction and at a non-perpendicular angle relative to said outer surface of said framing members with said second direction being different than said first direction; and

(e) deforming in said second direction a second portion of said framing members proximate said at least one piercing member as said at least one piercing member is being driven through said framing members so that said deformation crimps said framing members together.

25. The method of claim 24, wherein said at least one piercing member is two piercing members and steps (b) and (d) are performed concurrently.

26. The method of claim 24, wherein step (d) includes driving said at least one piercing member through said framing members in a second direction that is substantially opposite said first direction.

27. The method of claim 24, wherein said at least one piercing member is one of a plurality of piercing nails and steps (b) and (d) include leaving said piercing nails in said framing members.

28. The method of claim 24, wherein steps (b) and (d) include removing said at least one piercing member from said framing members after said at least one piercing member has deformed said first and second portions.

29. The method of claim 24, wherein step (d) includes driving said at least one piercing member through said framing member adjacent said first portion.

30. The method of claim 24, wherein steps (b) and (d) include driving said at least one piercing member with a powered driver.

31. The method of claim 30, wherein steps (b) and (d) include supporting a surface of said framing members opposite said at least one piercing member with a back plate on said powered driver.

32. The method of claim 24, wherein steps (b) and (d) include supporting a surface of said framing members opposite said at least one piercing member with a back plate as said at least one piercing member is being driven.

33. A tool for fastening framing members together comprising:

a crimping member having opposite first and second surfaces and operable to engage a flap in framing members, rotate about a pivot to deform said flap with said first surface and form a crimp joint that fastens said framing members together; and

a piercing member capable of movement relative to said crimping member and having a first portion configured to pierce said framing members and a second portion configured to rotate said crimping member, said piercing member being operable to move relative to said crimping member, pierce said framing members with said first portion to form said flap, rotate said crimping member with said second portion to form said crimp joint, and withdraw from said framing members.

34. The tool of claim 33, wherein said first portion has a generally U-shaped cross section and forms a generally U-shaped flap in said framing members.

35. The tool of claim 33, wherein said second portion of said piercing member is curved to facilitate rotation of said crimping member about said pivot in response to movement of said second portion.

36. The tool of claim 33, wherein said second surface of said crimping member is curved to facilitate rotation of said crimping member about said pivot in response to movement of said second portion of said piercing member.

37. The tool of claim 33, wherein said first surface of said crimping member is curved to facilitate deforming said flap.

38. The tool of claim 33, wherein said crimping member is spring loaded to disengage from said flap as said piercing member is removed from said framing members.

39. A tool for fastening framing members together comprising:

at least two crimping members each having a tip configured to pierce framing members in response to movement of said crimping members and each being operable to pierce said framing members, rotate about separate pivots to deform a portion of said framing members and form a crimp joint that fastens said framing members together; and

a ram capable of movement relative to said crimping members and having an engaging portion configured to rotate said crimping members, said ram member being operable to move relative to said crimping members and rotate said crimping members with said engaging portion to form said crimp joint.

40. The tool of claim 39, wherein said engaging portion of said ram flares outwardly.

41. The tool of claim 40, wherein said crimping members each have a recesses complementary to flaring of said engaging portion.

42. The tool of claim 39, wherein each crimping member has a curved surface that engages with and deforms said portion of said framing members.

43. The tool of claim 39, further comprising a stop that engages with said framing members and limits movement of said crimping members toward said framing members.

44. The tool of claim 39, wherein movement of said ram relative to said crimping members away from said framing members causes said crimping members to rotate toward said framing members and movement of said ram relative to said crimping members toward said framing members causes said crimping members to rotate away from said framing members.

45. The tool of claim 39, wherein said crimping members pierce through said framing members at a common location and rotate away from one another when forming said crimp joint.